

PEROT MALTING ELEVATOR
(American Malting Elevator)
(Genesee Brewing Elevator)
100 Childs Street
Buffalo
Erie County
New York

HAER No NY-250

HAER
NY
15-BUF
42-

PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
U.S. Department of The Interior
P.O. Box 37127
Washington, D.C. 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD

PEROT MALTING ELEVATOR
(American Malting Elevator)
(Genesee Brewing Elevator)
HAER No. NY-250

HAER
NY
15-BUF
42-

Location: 100 Childs St., Buffalo, Erie County, New York

Date: Mainhouse: building permit issued April 20, 1907
Annex: building permit application June 15, 1933;
issued July 10, 1933

Designer: Mainhouse: James Stewart & Co.
Annex: H. R. Wait

Builder: Mainhouse: James Stewart & Co.
Annex: Monarch Engineering

Status: Operational

Significance: The grain elevators of Buffalo comprise the most outstanding collection of extant grain elevators in the United States, and collectively represent the variety of construction materials, building forms, and technological innovations that revolutionized the handling of grain in this country.

Project Information: The documentation of Buffalo's grain elevators was prepared by the Historic American Engineering Record (HAER), National Park Service, in 1990 and 1991. The project was co-sponsored by the Industrial Heritage Committee, Inc., of Buffalo, Lorraine Pierro, President, with the cooperation of The Pillsbury Company, Mark Norton, Plant Manager, Walter Dutka, Senior Mechanical Engineer, and with the valuable assistance of Henry Baxter, Henry Wollenberg, and Jerry Malloy. The HAER documentation was prepared under the supervision of Robert Kapsch, Chief, HABS/HAER, and Eric DeLony, Chief and Principal Architect, HAER. The project was managed by Robbyn Jackson, Architect, HAER, and the team consisted of: Craig Strong, Supervising Architect; Todd Croteau, Christopher Payne, Patricia Reese, architects; Thomas Leary, Supervising Historian; John Healey, and Elizabeth Sholes, historians. Large-format photography was done by Jet Lowe, HAER photographer.

Historians: Thomas E. Leary, John R. Healey, Elizabeth C. Sholes, 1990-1991

This is one in a series of HAER reports for the Buffalo Grain Elevator Project. HAER No. NY-239, "Buffalo Grain Elevators," contains an overview history of the elevators. The following elevators have separate reports:

NY-240 Great Northern Elevator
NY-241 Standard Elevator
NY-242 Wollenberg Grain & Seed Elevator
NY-243 Concrete-Central Elevator
NY-244 Washburn Crosby Elevator
NY-245 Connecting Terminal Elevator
NY-246 Spencer Kellogg Elevator
NY-247 Cooperative Grange League Federation
NY-248 Electric Elevator
NY-249 American Elevator
NY-250 Perot Elevator
NY-251 Lake & Rail Elevator
NY-252 Marine "A" Elevator
NY-253 Superior Elevator
NY-254 Saskatchewan Cooperative Elevator
NY-256 Urban Elevator
NY-257 H-O Oats Elevator
NY-258 Kreiner Malting Elevator
NY-259 Meyer Malting Elevator
NY-260 Eastern States Elevator

In addition, the Appendix of HAER No. NY-239 contains brief notations on the following elevators:

Buffalo Cereal Elevator
Cloverleaf Milling Co. Elevator
Dakota Elevator
Dellwood Elevator
Great Eastern Elevator
Iron Elevator
John Kam Malting Elevator
Monarch Elevator
Pratt Foods Elevator
Ralston Purina Elevator
Riverside Malting Elevator

The Perot Elevator and Malting complex lies along the Buffalo River to the east of the American Elevator. The mainhouse was built by the James Stewart Company in association with a malting complex to the east. The second example of reinforced concrete elevator construction in Buffalo, it was completed in two phases, 1907 and 1933.

The design of the elevator is very similar to that of the American Elevator, with a full height basement and an octagonal network of hopper beams from which steel hopper bottoms are suspended. Folwell and Sinks, of the James Stewart Company, perfected and patented their slip form jacking system in 1907. The weight of the apparatus was reduced by passing the jacking rod through a hollow screw rod. This system may have been tested in the Perot Elevator, although the design of the basement would also have permitted the use of the cumbersome basement jacks and jacking frames employed at the American Elevator. As the two elevators have bins of nearly the same size, adjoin one another and were built in successive years, it is possible that the forms and jacking frames from the American Elevator were reused in the construction of the Perot.¹

The elevator provides storage for 500,000 bushels in its three parallel non-interlocking rows of three cylindrical main bins. These are 24' in inner diameter and arranged with tangential contact on 25'-8" centers. The arrangement of main bins provides for four interspace bins in two rows of two bins. The bins extend to a height of 90' measured from the top of the hopper beams. The bins, designed to carry barley, have a wall thickness of 9" and a minimum thickness of 16" in the tangential thickening.

The bin hoppering is provided by steel hoppers that extend across the full width of the bins and is suspended from the network of basement hopper beams. The interspace hoppers are formed of flat steel plate riveted into pyramids which fit within the square network of hopper beams below the interspaces. The basement provides full headroom and is entirely above ground level. The exterior walls appear as three walls of an octagon. Within the elevator, this octagonal geometry is extended and expressed in an octagonal network of basement hopper beams on rectangular pillars. The bin walls rise directly from the hopper beams. Two side faces of the exterior wall are pierced by upright windows. The structure is built on rectangular concrete sub-piers, capped by a concrete floor slab. The bin floor is of reinforced concrete on I-beams and features an ogee-molded cornice that follows the bin line. The bin floor is protected by an overall single-story gallery of structural steel, clad in corrugated iron, with a 3" book tile roof.

A 150' high workhouse is located at the southern end of the building. The building measures 56' x 22' between the ground and gallery level, and extends above the gallery across the bins to a total width of 32'. The workhouse construction resembles that of the American Elevator; both consist of two concrete lower stories, above which the structure is of structural steel clad in 12" to 16" book tiles to the bin floor and corrugated iron for the remaining height. The exact vertical arrangements within the workhouse are not known. Two sets of rectangular steel bins, measuring 10' x 8', are contained within the workhouse, each group consisting of two rows of three bins. A sacking shed abuts the workhouse to the south, and a single-track railroad loading shed to the north.

The elevator was built in association with a malthouse also constructed by the James Stewart Company. Both buildings are of structural steel with brick curtain walling. The original part of this complex lies to the east and northeast of the elevator and is of L-shaped plan. A 145' x 85' wing parallel to the river contains a two-story germinating house, and at its western end a three-story steeping house. The 135' x 73', three-story wing parallel to the elevator houses the kilns. There is a five-story workhouse at the junction of the two wings.

In June of 1933, an application was made to extend the elevator by adding an annex to its north side. The annex was built on the riverside of the existing structure and prior to the construction of 100' of new dockline, which increased the area of land available for building. The elevator was built by the Monarch Engineering Company to the in-house design of company engineer H. R. Wait. The structure was the last major elevator constructed in Buffalo by this company. The elevator features the conventional full basement and spread main bins typical of Wait designs. Like the later Wait elevators, H-O Oats and American Annex, the bins are spread and connected by link walls in order to achieve conventional convex quarter walling. The northernmost outerspace bin on the riverside elevation is horizontally subdivided to provide an upper shipping bin. The bins are 90' tall measured from the top of the bin slab.

The bins were designed to carry both barley and malt. The lower half of the bins could support 3,000 psi of compression and the upper half of the bins 2,500 psi. The bin walls are 8" thick and the link walls 12". The junction between the link walls is filleted, this additional triangle of concrete introduced in Wait's later designs accommodating the contact anchors now existing between link and bin wall.

The link rods and contact anchors consist of a lower thirty-five courses of 1" round rod on 10" centers, rising through seven

courses of 1" rod on 12' centers, twenty-nine courses of rod on 12" centers and finally twenty-one courses of 3/4" rod on 72" centers. Each course of horizontal bin reinforcing consists of three 25'-9" lapped rods. The verticals are arranged so that the horizontals are 1-1/2" from the upper surface of the bin wall. There are two link rods per course within the link walls. The link rods permit the use of continuous elongated windows in an exterior wall uninterrupted by structural pillars. The columns have a diameter of 3'-2" and thicken to a 7'-7" mushroom head. They are reinforced with six 1" vertical rods bound by a continuous spiral of 1/2" rod. The bin slab is reinforced by 1" straight bars at two levels, the lower of which forms a continuous grid. Eighteen bars are spaced between the centers of adjoining columns, becoming closer at the center of the span. The upper reinforcing is a discrete grid of seventeen bars centered above every pillar.

The elevator is built on thirty-six 4' diameter caissons capped by a 6" floor slab. The caissons below every basement column are reinforced with six 1" rods bound by a continuous spiral. The floor slab is reinforced by wire mesh. The lower mesh is continuous, while the upper mesh consists of 6' x 6' sheets laid below the columns. The bin floor, of reinforced concrete laid on I-beams, extends beyond the bin line to form a straight-edged overhanging eave. The floor is protected by an overall gallery of structural steel clad in corrugated iron with a concrete roof.

Considerable modifications to the supply and distribution of the grain within the complex appear to have been made during the construction of the annex. In 1933 a building permit was issued for the construction of conveyor galleries, including the gallery from the Perot Elevator to the northern end of the American Elevator. The gantry terminated in a small addition to the workhouse of the Perot Elevator, and a new northern workhouse above the gallery of the American Elevator. These additions provided for the unloading of grain destined for the Perot complex via the marine legs of the American Elevator. The gantry from the elevator workhouse to the malting complex workhouse was also added at this time.

In June of 1936 a building permit was issued for the extension of the original malthouse. The riverside works undertaken prior to the construction of the elevator annex provided sufficient additional land for the construction of the 150' x 45' waterfront extension to the malthouse. The two-story building is steel-framed with brick walls, concrete floors, and a book tile roof.

BUSINESS HISTORY

The Perot Elevator and Malting Complex has the most unusual history of any of the city's large grain elevators. While the elevator itself has only occupied the river site since 1907, the history of the founding company dates back to seventeenth-century colonial Philadelphia. Perot Malting originated when Anthony Morris II emigrated to Philadelphia in the 1680s and began a highly successful malting and brewing business in the city's "Northern Liberties" region, a small enclave northeast of downtown along the Delaware River. Morris' company began in 1687, and, despite moving from Philadelphia to Buffalo, remained under family control until 1963. In the 1820s, Francis Perot, a Morris son-in-law, assumed responsibility for the brewery after six generations, in the absence of a Morris heir. Perot was joined by his brother William, and together they renamed the business Francis & Wm. S. Perot.²

The Morris family continued to be involved with the business, if not in control of it, until 1839. For the next twelve years, the Perot brothers ran operations alone. In 1850 the brothers dropped brewing operations, concentrating exclusively on malting processes to serve the ever-expanding brewery business of Philadelphia. In 1882 the company made its first foray outside the City of Brotherly Love with the acquisition of a malt house in Oswego, New York. The company's name changed several times before the firm became incorporated in 1887 as Francis Perot's Sons Malting Company.³ Francis Perot's Sons Malting Co., as it was still called, came to Buffalo in 1907 to capture some of the midwest market. The new Milwaukee brewers were eroding the Philadelphia brewing industry's popularity and shifting production toward the Great Lakes. In 1879 Philadelphia had ninety-four breweries; by 1910 there were only forty-six. Buffalo's brewing industry was less extensive than Philadelphia's but vital nonetheless. In the early twentieth century, Buffalo had one significant malt house--American Malting.⁴

Perot's decision to move into the Buffalo malting market was not without risk. Prior to 1890, Buffalo was the single largest malting center in the United States. After that date, however, a local 30-cent-per-bushel malt tax created a decline, especially as malt houses moved toward the midwest barley fields in an effort to cut transport costs. There was no relief until after 1911, making the 1907 Perot start-up in Buffalo a daring venture. Plants that remained in Buffalo did so "under the most adverse conditions." The presence of American Malting should have been a deterrent since the giant, powerful trust had absolute monopoly as its goal. Competitors were not welcomed, especially ones as small as Perot. For its part, Perot Malting not only invaded Buffalo, but also constructed its malt house directly next to American Malting only two years after the larger facility had

been erected.⁵ It was not until 1914, seven years after Perot built its malt house and elevator, that the American Malting trust began to encounter restrictions on its dominance through general federal regulations of trusts. Only in 1919 did the trust finally begin to dissolve under assaults from stockholders' lawsuits. Therefore, for nearly 12 years, Perot operated directly alongside its biggest national competitor apparently without harm.⁶

In the interval between Perot's Buffalo founding in 1907 and American Malting's final dissolution in 1922, the smaller malt house received all of its barley, the raw material from which malt is derived, via railroad. The Perot Elevator had been constructed without any marine legs despite the malting company's desirable riverside location. In 1922 the American Malting Elevator was sold to American Elevator & Warehouse (later American Elevator and Grain Co.). On July 1, 1922, an agreement was struck between Perot and American for the latter elevator to handle water-borne shipments for Perot. In 1933 a successor agreement between Perot and American established that part of Perot's land would be used to erect a moveable marine tower plus a 100' dock. These would be built by Perot but used by American Malting. Perot's barley shipments were then conveyed to Perot from American via an overhead belting system. The use of Perot's land for the marine tower and other facilities would be continued on a ten-year basis with renewal every year. Rent paid to Perot by American for land use would be \$4 per year.⁷

Both American and Perot proceeded with these arrangements during the Prohibition era despite the curtailment of their prime market, the brewing of lager beers. Perot accommodated the restrictions by converting the elevator to general public grain storage and restricting malt production to legal malt used for medical purposes and for the only legitimate alcohol product, "near beer." After repeal of prohibition laws in 1933, the malt house was doubled in capacity, as was the grain elevator capacity which was increased to 1 million bushels. During World War II, the U.S. government absorbed 70 percent of Perot's production to make industrial alcohol and beer for troops based in Europe.⁸

Perot Malting continued as Buffalo's largest malt house until 1962 when the facility was sold. The eastern beer market and its indigenous brewing industry were yielding to the increasing centralization of production. Where Philadelphia had been overwhelmed by the large number of midwestern breweries, Buffalo was losing out to increasingly large firms capable of national marketing. Merchant malt houses, those not owned by specific brewers, found it extremely difficult to locate

customers. After 275 unbroken years of business, Perot closed the Buffalo plant and, in 1963, dissolved as a company.⁹

In an ironic twist of history, the company that purchased the Perot elevator was named American Malting. It was not a successor to the giant combine Perot had outlived nearly sixty years earlier, but an Illinois-based venture with obvious dreams of glory. The company did not fare well, however; it went bankrupt five years later, in 1968, and was forced to reorganize as WAMI, Inc. In 1969 American Malting "sold" the elevator to its alter ego, WAMI, which ran the elevator for another fifteen years. By 1984 WAMI chose to divest itself of the elevator and malting operations. The company was dissolved a year later.¹⁰

In December, 1984, Thomas Mensing, head of Minnesota Grain Pearley Company, purchased the Perot operation through his company, TM Leasing. The company had planned to modernize the operations with assistance from the Erie County Industrial Development Agency, but funds never materialized. In 1986 TM had solicited Genesee Brewing, the large Rochester-based brewery, as a customer for Buffalo malt. Genesee made an offer for the entire plant--not just the product--acquiring control of the Buffalo malting plant through its subsidiary, Fred Koch Malting. Genesee continues to operate the facility today, a vital link in the upstate brewing industry.¹¹

MATERIALS HANDLING: HISTORY AND DESCRIPTION

The elevator and malt house remain substantially unchanged since the last major construction in 1936. The complex consists of a grain elevator with two sections (1907-1933), each with nine major bins, and two malt houses (1907-1936). Unlike flour mills, the elevator in a malting plant is part of the production process rather than merely storage. All grain deliveries today are received by rail, as they were when the elevator first went into operation. Beginning in 1933 Perot had also obtained its barley via lake carrier through a cooperative arrangement with the adjoining American Elevator. The American is now owned by Omaha-based ConAgra, Inc., and grain transfers via overhead conveyor gallery to the former Perot Complex have ceased. Rail cars currently arrive three at a time, on track No. 2 between the elevator and the malt house, where they unload over a gravity drop to a single subterranean hopper. Cars empty 3,800 bushels of barley per hour.

Instore barley drops onto three 30" wide crossbelts and is carried to the single 6,000 bu./hr. receiving leg. This lofter takes the barley up to the workhouse, where it enters the 3,000-

bushel garner-scale unit. The scale, a mechanical balance beam, is probably original 1907 equipment. From the scale, grain is dropped either to the 40" wide bin floor belt or transferred to the cleaning and grading area. Upon arriving on the grading floor one story below, grain moves first to the Carter Day indent cylinder cleaner (c. 1960s). Grading is handled by three S. Howes Co. (Silver Creek, NY) reel graders introduced about 1949. The barley is separated into A, B, and C grades (7/64", 6/64", 5/64") and is then recombined after noting the ratio. Overall grading capacity is 800 bu./hr. From grading, a 1,000 bu./hr. jack leg takes the barley back to the bin floor for transfer to the east-side elevator bins, where it is kept until needed in the elevator dry tanks associated with each malt house. Screw conveyors transfer the barley from elevator to malt house.

Once the malting process is completed, malt returns to bins on the west side of the elevator. Before entering storage, it is recleaned and polished at the S. Howes machines at a maximum rate of 1,000 bu./hr. Malt is then conveyed to a 1,800 bu./hr. leg for re-elevation to storage in the malt bins. Malt batches are binned for five days and periodically analyzed by the resident maltster who recommends the proper blends.

When malt is ready for shipment, it is dropped from the bins and conveyed to the dump scale. There are a total of three 30" belts in the basement of the elevator. The malt is elevated to an aspirator from which it is dropped by gravity into waiting trucks. The shipping system processes 1,490 bu./hr. Nine trucks per day can be loaded over a twenty-four-hour period. Although no rail shipping is currently done, the elevator could fill four rail cars per day. Once the trucks are filled, the malt is hauled to Rochester, New York to be brewed along with other ingredients into Genesee Beer.

ENDNOTES

1. The following paragraphs are based on information from a variety of sources including plans and building permits housed in Buffalo City Hall, and Sanborn Fire Insurance maps. Illustrations of the site are included in Grain Dealers Journal, Special Plans Book, 3 (1913), 57.
2. Oliver Evans Chapter, Society for Industrial Archaeology, Workshop of the World (Wallingford, PA: Oliver Evans Press, 1990), 9-3 to 9-7; Guide to the Manuscript Collections of the Historical Society of Pennsylvania (Philadelphia: Historical Society of Pennsylvania, 1991), n.p.; William L. Downard, American Brewing and Distilling Industries (Westport, CT: Greenwood Press, 1980), 124-25.
3. Downard, American Brewing, 143-44; Guide, n.p.; Buffalo News, 3 August 1957, p. 1.
4. Downard, American Brewing, 145.
5. Erie County Clerk (ECC), Deeds, Liber 1012, March 1, 1905, p. 418; C.H. McLaughling, "Pact May Regain Lost Malt Supremacy," Buffalo Live Wire, 2 (April 1911), 201-2. All Erie County Clerk documents are listed by date of document origin, not by date of filing, unless otherwise noted.
6. ECC, Corporations, American Malting, Certificate of Incorporation and Amendments, May 27, 1919, Box 507.
7. ECC, Deeds, Liber 2257, May 25, 1933.
8. Buffalo and Erie County Public Library (BECPL), Scrapbooks, "Industry," Vol. 7, p. 160, Vol. 8, p. 267.
9. ECC, Corporations, Francis Perot's Sons Malting Company, Certificate of Dissolution, November 30, 1963.
10. ECC, Deeds, Liber 6831, November 2, 1962, pp. 244-46, Liber 6976, November 26, 1963, pp. 276-79; Liber 7578, February 28, 1969, pp. 317-18; Corporations, WAMI, Inc., Certificate of Incorporation, December 16, 1968; American Malting Inc., Certificate of Name Change, April 3, 1969, Box 46968.
11. ECC, Deeds, Liber 7578, February 28, 1969, pp. 317-18, Liber 9401, December 4, 1984, pp. 332-33; Liber 9609, August 26, 1986, pp. 645-46.

SOURCES

Buffalo and Erie County Public Library Scrapbooks, "Industry,"
volumes 7 and 8.

Buffalo Live Wire, 2 (April 1911), 201-2.

Buffalo News, 3 August 1957, p. 1.

Building Permits and Plans, 301 Buffalo City Hall.

#24182 (April 2, 1907)
#24183 (April 20, 1907)
#34330 (July 11, 1911)
#37202 (August 24, 1912)
#25113 (June 9, 1933)
#25225 (July 10, 1933)
#26159 (July 11, 1934)
#27327 (September 13, 1935)
#28115 (June 29, 1936)
#42681 (March 22, 1949)
#52201 (July 12, 1954)
#88258/A 20082 (June 12, 1962)
#90892/A 22278 (February 27, 1963)

Downard, William L. American Brewing and Distilling Industries.
Westport, CT: Greenwood Press, 1980.

Erie County Clerk, Records, Erie County, NY.

Guide to the Manuscript Collections of the Historical Society of
Pennsylvania. Philadelphia: Historical Society of
Pennsylvania, 1991.

Grain Dealers Journal, Special Plans Book, 3 (1913), 57.

Oliver Evans Chapter, Society for Industrial Archaeology,
Workshop of the World. Wallingford, PA: Oliver Evans Press,
1990.

Plans of Grain Elevators. 4th ed., Chicago: Grain Dealers
Journal, 1918, 57.

Sanborn Fire Insurance maps.

U.S. Army Corps of Engineers, Port Series, No.41, The Port of
Buffalo, New York, rev., 1971 (Washington: Government
Printing Office, 1972), 44.

U.S. Army Corps of Engineers, Port Series, No.41, The Port of Buffalo, New York, rev., 1980 (Washington: Government Printing Office, 1980), 49.

Interview with Brian D. Robins, Plant Manager and Maltster, Fred Koch Brewery Malting, May, 1991.

APPENDIX

Mainhouse

Foundations: Rectangular concrete sub-piers, capped by concrete floor slab

Basement: Full height, above grade, rectangular basement pillars support octagonal network of basement beams; exterior walls appear as half-hexagons and are pierced by upright windows

Hoppers: Conical steel to full width of main bins, supported by basement beams; flat plate steel to full width of interspaces, supported on square network of beams formed by intersection of the octagonal network below main bins

Bins: Capacity 500,000 bushels
Main bins 3 x 3 in parallel rows, cylindrical 24' in diameter on 25'-8" centers 90' high (from top of basement beams)
Interspace bins 2 x 2
No outerspace bins
Tangential intersections to all bins
Bin wall thickness 8", at contacts 16"
Reinforcement unknown

Bin Floor: Concrete on I-beams, ogee-molded cornice follows bin line at eaves

Gallery: Structural steel, clad in corrugated iron, book tile roof

Workhouse: Structural steel clad in corrugated iron

REFERENCES: Although the original city plans have been lost, the plans for the 1933 Annex show enough of the mainhouse to deduce the information above. Sanborn Fire Insurance Maps note that the bin floor is of book tile; city building permits give dates and city plans books detail costs of construction. The Grain Dealers Journal, Special Plans Book, 3 (1913), 57, illustrates the site.

Annex

Foundation: Caisson (4' diameter) capped by 6" floor slab, reinforced with wire mesh, lower mesh continuous, upper mesh 6' x 6' beneath columns

Basement: Full height (14') at grade; 6 rows of 4/6/6/6/6/4 mushroom-headed columns; 3'-2" diameter; all columns equidistant, four columns below each main bin, except corner bins where one corner is supported on the diagonal basement wall; columns reinforced with continuous spiral together with verticals; columns support 1'-3" bin floor; slab reinforced with 1" straight bars; lower bars form a continuous grid; 18 bars placed between the centers of adjoining columns, more closely spaced at the center of the span; top reinforcing a discrete grid of 17 bars centered above every pillar; exterior basement wall of smooth concrete without panelling, featuring continuous narrow elongated windows

Hoppers: Mortar slab on slag concrete, resting on bin slab, spouts via wide 12' conical steel hoppers set into bin slab

Bins: Capacity 431,000 bushels
Main bins 3 x 3, in parallel rows, cylindrical 21' in diameter, 90' tall (from bin floor)
Interspace bins 2 x 2
8 outerspace bins, convex 1/4 circle wall between all outer main bins
Non-tangential contacts between all bins by straight link walls, 5'-4" long
Bin wall thickness 8", link walls 12",
Vertical reinforcing, general arrangements unknown; 3 verticals close to contact between main and 1/4 walls, 6 in close proximity to contact between link wall and bin
Horizontal reinforcing wired to outside of verticals; graduated round rods at varying course intervals; main and 1/4 walls have the same size rods in any one course; rods in the link walls are proportionately larger, two continuous link rods, and 4 contact anchors

per course; link wall bars and contact
anchors bent about the verticals mentioned
above, not hooked over the horizontal bands

Gallery: Structural steel clad in corrugated iron with
concrete roof

REFERENCES: Original plans are housed in Buffalo City Hall. City
building permits provide the dates.